PATENT
Docket No. 361752000100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In the Application of:

Keunsuk P. CHANG et al.

Serial No.: 09/383,724

Filing Date: August 26, 1999

For: BIAXIALLY ORIENTED POLYPROPYLENE FILM FOR PACKAGING WITH STABLE COEFFICIENT OF FRICTION PROPERTIES

Examiner: D. Lawrence Tarazano

Group Art Unit: 1773

APPELLANTS' OPENING BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a timely appeal from the final rejection of claims 1-4 and 6-10 in this application. Appellants set forth these claims in the attached Appendix of Appealed Claims. Appellants also attach an evidence appendix in accordance with 37 CFR 41.37(c)(1)(ix).

I. REAL PARTY IN INTEREST

The real party in interest is Toray Plastics (America), Inc., of North Kingstown, Rhode Island, the assignee of appellants' entire, right, title and interest in this application.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences within the meaning of 37 CFR 41.37(c)(1)(ii) known to appellants or their undersigned counsel.

III. STATUS OF CLAIMS

Claims 1-4 and 6-10 (reproduced in the attached Appendix), which are under final rejection, are pending in this application. Claim 5 was canceled in the Preliminary Amendment filed March 12, 2002.

Claims 1, 2 and 4 stand rejected as anticipated by Shah, claims 1-4, 6-8 and 10 stand rejected under 35 USC 103(a) on Shah and claims 1-4 and 6-9 stand rejected under 35 USC 103(a) on Mizuno.

IV. STATUS OF AMENDMENTS

The Examiner refused to enter the Amendment Under 37 CFR 1.116 filed April 5, 2004. The claims on appeal set forth in the Appendix thus reflect the claims as they stood before the filing of the Amendment Under 37 CFR 1.116.

In the Advisory Action mailed May 14, 2004, the Examiner did not refer to the Declaration of Keunsuk P. Chang and its attachments as filed with the Amendment Under 37 CFR 1.116 filed April 5, 2004, but instead attached evidence of his own in response to appellants' arguments. Since the Examiner did not address or expressly refuse to enter Mr. Chang's declaration in accordance as required by the procedure prescribed in MPEP 716 yet cited evidence of his own to rebut appellants' positions, appellants respectfully submit that Mr. Chang's declaration and its attachments stand entered for purposes of appeal in accordance with 37 CFR 41.37(c)(2) and are included in the attached evidence appendix. If the Examiner or the Board should disagree with appellant's position on the presence of Mr. Chang's declaration in the record, this application should be remanded in the interest of fairness for entry and express consideration by the Examiner of Mr. Chang's declaration and its attachments in light of the arguments presented below.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

This invention is a two-layer laminate film, intended for use in packaging applications and exhibiting marked improvement over prior films in stable slipperiness, i.e., having a low and stable coefficient of friction (COF), transparency and printability. Specification, page 1, lines 8-10. Appellants disclose that the invention achieves these characteristics by providing an additive system that is essentially non-migratory. Specification, page 2, lines 19-22. The first resin layer of the film as broadly claimed includes a polyolefin resin and has a surface that is treated by a discharge treatment method that imparts printability to the treated surface. The second resin layer of the claimed film includes a resin, a first additive material and a second additive material; the resin of the second resin layer is claimed as consisting essentially of polypropylene and is formed on and adhered to a surface of said first resin layer opposite the treated surface.

The first and second resin layers each contain up to 800 ppm of the fatty amide stearamide or erucamide, which acts as a slip agent. The first additive material in the second resin layer is least one crosslinked silicone polymer in an amount of about 0.1% - 0.5% by weight of the second resin layer and/or at least one silicone oil in an amount of about 0.02% - 0.08% by weight of the second resin layer. The second additive material in the second resin layer is at least one amorphous aluminosilicate in an amount of about 0.10 - 0.50% by weight of the second resin layer.

VI. ISSUES PRESENTED FOR REVIEW

Whether the Examiner erred in rejecting claims 1, 2 and 4 as anticipated by Shah.

Whether the Examiner erred in rejecting claims 1-4, 6-8 and 10 under 35 USC 103(a) on Shah alone.

Whether the Examiner erred in rejecting claims 1-4 and 6-9 under 35 USC 103(a) on Mizuno alone.

VII. GROUPING OF CLAIMS

The claims all stand or fall together with claim 1 as to each rejection.

VIII. ARGUMENT

A. The Rejection of Claims 1, 2 and 4 As Anticipated By Shah Should Be Reversed.

1. The Examiner's Interpretation Of Appellants' Claims 1, 2 And 4 Is Incorrect As A Matter Of Law.

Once appellants' claims receive their proper interpretation, Shah cannot anticipate them. The two claim interpretation issues are: (a) what is does the phrase in claim 1 "the resin of the second resin layer consists essentially of polypropylene" mean and (b) what does the phrase in claim 1 "the first additive material comprises * * * at least one silicone oil in an amount of about 0.02% - 0.08% by weight of the second resin layer" mean?

The Examiner effectively interprets phrase (a) of claim 1 so as to embrace second resin layers that are made of copolymers and/or blends of polypropylene resins, which may or may not contain other repeating units than propylene, ester groups and the like. See page 2 of the final Action, where the Examiner states, "The examiner interprets 'polypropylene' to be materials which predominantly contain 'propylene' repeating units and would include copolymers and blends of polypropylene resins. The term 'polypropylene' is not limited to 'polypropylene homopolymers' or a single polypropylene material." This interpretation does not give adequate weight to the phrase "consisting essentially of" and is not reasonable in light of the claim language as a whole or the specification of this application.

The language chosen by applicants has always intended that the resin of the second layer be a resin or resins that are for all intents and purposes made up of propylene repeating units (i.e., are *essentially* polypropylene homopolymers) and do not include any meaningful amounts of copolymer units other than propylene or of such units as ester groups or the like. The Examiner's

interpretation allows for the significant presence, as a part of the resin component of the second resin layer, of units other than propylene units in the polymeric material making up the resin component of the second resin layer and ignores the long-settled requirement of the law that the phrase "consisting essentially of" excludes unnamed components that affect the basic and novel characteristics of the invention. *Atlas Powder Co. v. E. I. Du Pont de Nemours & Co.*, 750 F.2d 1569, 224 USPQ 409 (Fed. Cir. 1984); *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976). The court in *Herz* referred with approval to *Ex parte Davis,* 80 USPQ 448 (Pat. Off. Bd. App. 1948), the opinion in which states in relevant part:

> In the present case where the claims recite three ingredients and the reference discloses four, the important question is whether the term "consisting essentially of" excludes that fourth ingredient. We think that it does, since the "modifier" materially changes the fundamental character of the three-ingredient composition.

Appellants also note the language of MPEP 2111.03, which states, "For searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification of what the basic and novel characteristics actually are, 'consisting essentially of' will be construed as equivalent to 'comprising.'" Here, the specification of this application clearly indicates what the basic and novel characteristics involved are, e.g., marked improvement over prior films in stable slipperiness, i.e., having a low and stable COF, transparency and printability, which are achieved by, among other things, using an essentially non-migratory additive system. The claims on appeal are thus not open to other materials that could materially affect at least these characteristics of the invention, which in this case may be repeating units other than propylene and ester groups, for example. This interpretation has been clear throughout the prosecution history of this application as well.

Claim interpretation issue (b), what does "about 0.08% by weight" mean in the context of the maximum silicone oil content of the second resin layer, arises in the context of the

anticipation rejection on Shah: the Examiner contends that "about 0.08% by weight" literally embraces a silicone oil content of 0.1% by weight. It does not.

This issue did not arise until the final Action, on page 2 of which the Examiner stated:

> The silicone oil can be in the range of **about** 0.1 to 1.0%; the applicants claim a value of 0.08%. A value of 0.08% rounds up to a value of 0.1%, and the term "about" gives the prior art value of 0.1 enough latitude to read on the applicants' end point. [Emphasis in original.]

Putting aside the inaccuracy of the reference to the prior art "reading on" a claim term, the Examiner's position is clear: "about 0.08%" is the same as 0.1% because one would round 0.08 up to 0.1. If the Board finds that the comments in the Advisory Action are not in the record before the Board, this statement constitutes the entirety of the Examiner's justification for his claim interpretation, which is not based on evidence and does not take into account the practices and knowledge of persons skilled in this art.

Appellants presented extensive testimony from Mr. Chang to rebut the Examiner's position, attached in the evidence appendix. Mr. Chang explained in paragraphs 3-5 on pages 2-3 of his declaration, with reference to relevant documents, that persons of ordinary skill in this art would not have considered additive amounts of 0.08% and 0.01% to be "within scientific error" or that 0.08 would have been rounded up to 0.1. Appellants respectfully refer the Board to these paragraphs, which are self-explanatory, and emphasize the following points made by Mr. Chang:

> (1) At the time of the invention, commercially available dosing and resin blending systems were already very capable of precise mixing and blending of very small quantities of additives. A target additive loading of 800 ppm (0.08%) could easily be achieved and maintained and was clearly distinguishable from a target additive loading of 1000 ppm (0.1%) using dosing systems readily available at the time of the invention.
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> (2) Commercial production-grade resin blenders available as early as 1989 easily had a dosing accuracy of ±1.0%. As such, a target value of 0.08% (800 ppm) for an additive with an error of ±1.0% would give a range of additive concentration of from 0.0792% (792 ppm) to 0.0808% (808 ppm). A target value

of 0.10% (1000 ppm) with an additive with an error of ±1.0% would give a range of additive concentration from 0.099% (990 ppm) to 0.101% (1010 ppm). Persons of ordinary skill in this field of technology could and would easily have distinguished between a 0.08% loading and a 0.1% loading of an additive and would never have considered it appropriate to round a 0.08% loading up to a 0.10% loading, which would imply an error of 20%, which is totally unreasonable and would likely produce unacceptable results.

(3) "Scientific error" is a function of the measurement system, and the more accurate the measurement system, the smaller the error will be. With the accurate dosing systems available at the time of the invention (and even more accurate systems available today), a 0.08% additive loading is not "about" a 0.1% loading. Moreover, such accurate dosing of additives is critical in the packaging film industry in order to design precision performing films for many diverse properties and applications. The degree of scientific error experienced with dosing systems is, as noted above, in a range of ±1% of the additive dose, and, depending on which value is the base of comparison, values of 0.08 and 0.10 vary from one another by an error of 20% (if 0.10 is the base) or 25% (if 0.08 is the base).

Thus, not only did Mr. Chang show that the Examiner's position regarding rounding and "scientific error" is not supported by any evidence cited by the Examiner, he provided probative testimony showing that the Examiner's position is incorrect and should not be adopted by the Board.

The Examiner's response in the Advisory Action to Mr. Chang's testimony said not a word about that testimony. Instead, the Examiner attached a copy of pages from a "General Chemistry" textbook relating to significant figures and rounding of numbers and argued that Mr. Chang's declaration was "flawed" because it did not into account significant figures[1] or the term "about." The Examiner did not even pretend to address the particular art of laminated plastic films to which the claimed invention is directed, an art in which Mr. Chang is well-qualified as an expert in both the art generally and in the equipment used in this field of endeavor to measure

[1] Appellants note that the Examiner's mention of significant figures in the Advisory Action is the first mention of this issue in the prosecution of this application or any of its parents. Mr. Chang would have had to be clairvoyant to anticipate this criticism of his declaration.

the quantities of additives added to plastic films, as shown in paragraphs 1 and 3 of his declaration. Appellants respectfully submit that the Examiner's approach is legally and factually erroneous because it is entirely artificial and does not address the fundamental aspect of claim interpretation that claims are to be interpreted in accordance with their meaning to persons skilled in the pertinent art.

Appellants also respectfully point out that Mr. Chang did, indeed, in the points summarized above, address the issue of how much latitude the word "about" connotes in this art when referring to additive amounts: in this art additive amounts are measured to a precision in a range of ±1% of the additive dose. *That* is the ordinary meaning in this art of how far from the nominal maximum silicone oil additive content of 0.08% by weight may vary and still be within the claim limitation of "about" 0.08%. That is, "about 0.08% by weight" of the silicone oil additive means, as explained by Mr. Chang in paragraph 4 of his declaration, a range of additive concentration of from 0.0792% (792 ppm) to 0.0808% (808 ppm).

The illogic of the Examiner's position becomes apparent when one takes the consequences of his reasoning to its logical conclusion. If we follow conventional rounding rules, the Examiner says, 0.08% rounds to 0.1%. However, appellants point out that under the Examiner's view of rounding 0.07% rounds to 0.1%, so does 0.06%, and even 0.05%. Appellants ask, Is 0.05% the same as 0.1%? Mr. Chang's declaration shows that 0.05% is significantly different than 0.1%, considering that this industry works with small amounts of additives routinely and does so on a very accurate basis. The Examiner has not denied this and has instead retreated to a mathematical analysis not tied to the art to which this invention pertains. If we follow the Examiner's argument on significant figures and rounding rules, even values as low as 0.05% or "about 0.05%" round to 0.1% and would be the same in the Examiner's view. To say that a value that is 50% or 60% or 70% of another precisely measured

value is "about" the same as that value robs language of all meaning and renders the Examiner's interpretation unreasonable..

Thus, for the Examiner to argue that 0.1% by weight is "about" 0.08% by weight flies in the face of the record, is illogical and is not supported by evidence cited by the Examiner of the level of knowledge in the relevant art.

2. The Correct Claim Interpretation Renders The Anticipation Rejection Of Claims 1, 2 and 4 On Shah Untenable.

The Examiner's justification of this rejection on page 6 of the final Action adopted the reasoning in the prior Action and stated:

> Regarding Shah et al., the applicants state that the prior art siloxane amounts do not fall within the claimed range. The examiner disagrees. The applicants amended the claims to cite an endpoint of 0.08%. The applicants merely carved up the range by using a value from their examples, there is no indication that this is a preferred range[2] or that it has any special properties over a value of 0.1% as claimed before and as taught by the prior art. Values of 0.08% and 0.1% are within scientific error of each other and within numerical rounding.

The difference on which appellants first rely for patentability over Shah is the silicone oil content limitation discussed above. Another difference relates to Shah's failure to disclose that the first and second additives are added to the layer opposite the layer that is surface treated. A third difference relates to Shah's failure to disclose the optional amounts of fatty acid amides as claimed. The Examiner's logically fails legally and factually on all points.

First, the Examiner cited no evidence from Shah to support his statement that a value of 0.08 rounds up to a value of 0.1. The Examiner cannot simply make a statement regarding how

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[2] The Examiner's opinion regarding appellants' motivation in selecting a maximum claimed additive amount of 0.08% is irrelevant to whether Shah identically discloses additive contents within the scope of such a maximum amount. There is nothing in law that requires applicants to draft claims to what an Examiner might deem to be a "preferred range" or that penalizes applicants for doing so.

persons of ordinary skill in this art would view the values disclosed in the prior art and claimed in this application without factual basis. The Examiner is *assuming*, without basis in any evidence, that persons of ordinary skill in the art would have considered Shah's minimum value of 0.1% additives to be the same as applicants' claimed maximum of 0.08%. As the Federal Circuit explained in *In re Zurko*, 258 F.3d 1379, 1385, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001), the "deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense' to one of ordinary skill in the art. * * * With respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic knowledge or common sense." The same logic applies to alleged findings by Examiners. The Examiner does not deny that Shah teaches a minimum organosiloxane (silicone oil) content of 0.1%, so it cannot anticipate the claims.

Second, Shah itself shows that the Examiner's rounding and "scientific error" arguments are not supported by evidence of knowledge of how persons of ordinary skill in the art would read Shah and the claims. Shah generally discloses the use of organosiloxane in an amount of 0.1-1% by weight of the skin layer (1000-10,000 ppm), columns 3 and 4, *passim*, preferably 0.18-0.5% (1800-5000 ppm), column 12, lines 38-48, well above the claimed upper limit of about 0.08% (800 ppm). Shah discloses that the combination of a relatively large amount of silicone oil and the high loading of antiblock particles reduces screw slippage (column 2, lines 15-25), which means that Shah itself discloses that the use of silicone oil in an amount less than that disclosed is not appropriate to achieve the results disclosed in Shah. Reading the minimum amount disclosed in Shah of 0.1% as being the same as "about 0.08%" files in the face of Shah's own disclosure. By contrast, a goal of this invention is to minimize the amount of migratory additives in order to improve printability and control seasonal/environmental variation in slip properties and thus maintain stable slip performance, as disclosed at page 2, lines 19-22, of the

specification. As a result, this invention produces good slip properties with a minimum amount of migratory additives, contrary to the large amounts of migratory additives taught by Shah.

In addition to these observations, appellants note that Shah does not teach the claimed first, or "surface," layer which applicants claim as being surface treated. The Examiner's application of Shah shows an intrinsic misinterpretation of Shah's disclosure. Appellants' claimed "surface layer" is the layer which applicants claim as being surface treated, that is, the *first* layer as claimed by appellants; the "base" of applicants' film is the *second* layer. The rejection of record applies Shah in reverse of what applicants claim, by arguing that Shah anticipates claims 1, 2 and 4 because Shah's surface treated layer, that is, the layer of Shah's film that corresponds to the claimed *first* layer, contains the first and second additive materials that applicants claim to be in the *second* layer. The Examiner refers to col. 13, lines 37+, of Shah as a disclosure of surface treatment, but this disclosure fails to remedy this insufficiency of Shah because (a) the cited passage does not state which surface is treated and thus does not teach that the base layer of Shah receives surface treatment; and (b) Shah discloses that the surface treatment is used to induce crosslinking, which persons of ordinary skill in the art know does not happen with resins that consist essentially of polypropylene. Shah's base layer does not include the claimed amounts of the first and second additive materials.

The Board may find the Examiner's response to appellants' position in paragraph 17 on pages 6 and 7 of the final Action, where he says that the requirement that the first resin layer be "surface treated by a discharge treatment method that imparts printability to the treated surface" does not claim a particular amount of surface treatment because "[a]lmost no surface treatment is needed to meet this limitation." The Examiner cites the example of a Sharpie pen, which he says will print on the surface of an untreated film. This argument does not respond to the substance of appellants' position and does not present *evidence*, as opposed to unsupported supposition, of how Shah identically discloses the claimed second resin layer and its first and second additive

materials. The Examiner's saying that a Sharpie will write on an untreated surface does not make it so; furthermore, the claims require *some* amount of surface treatment to produce printability, so it is irrelevant that a particular type of pen can be used to write on a surface that has received no treatment as claimed. Furthermore, the Board can readily see that writing with a Sharpie is not "printing" as this art understands the term.

Paragraphs 6-8 of Mr. Chang's declaration explain how even small amounts of additives in the surface treated layer can adversely affect printability, so that persons of ordinary skill in the art would not have been taught by Shah, in which the surface layer contains additives, to make the claimed film, the surface layer of which does not contain additives. Mr. Chang's testimony overcomes the Examiner's unsupported comments regarding printability and the suggestion that writing with a Sharpie is analogous to printing.

Finally, Shah broadly discloses the use of 0.1%-1% fatty acid amides and refers to a relatively large amount of fatty acid amide, 0.2-4.0% as preferable (column 12, lines 37-42). Again, this invention seeks to minimize the amount of migratory additives, so that fatty acid amides are an optional component and are present only up to 0.08%, below Shah's disclosed minimum, if that option is chosen.

For all of these reasons, Shah does not identically disclose the invention of claims 1, 2 and 4 and thus does not anticipate these claims. The rejection of claims 1, 2 and 4 as anticipated Shah should be reversed.

B. Shah's Disclosure By Itself Would Not Have Rendered Obvious The Subject Matter Of Appellants' Claims 1-4, 6-8 and 10 As A Whole.

In paragraph 8 of the final Action the Examiner states that Shah "teach[es] films having a base layer and at least one sealable layer." In paragraph 9 of the Action, the Examiner repeats the language from paragraph 12 of the previous Action:

> In the absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the cited antiblocking agents and lubricants in the films taught by Shah et al. for their known and expected function, in which the amounts of these components would be directly related to the lubricating/antiblocking properties realized.

Since Shah by itself is not evidence that a person of ordinary skill in the art would have been motivated to make the invention as claimed, for the reasons stated above with respect to the anticipation, Shah does not create a *prima facie* case of obviousness that applicants have to rebut. The Examiner's logic relates to amounts of lubricating and antiblocking agents without explaining the factual basis for a finding that persons of ordinary skill in the art would have any reason at all from Shah, without the aid of other prior art, to make the claimed invention.

As explained above, Shah does not disclose the claimed amounts of either the silicone oil or the fatty acid amide and says nothing that would have motivated persons of ordinary skill in the art to use less of such additives than Shah discloses. The Examiner has the initial burden of pointing to evidence in the prior art itself that persons of ordinary skill in the art would have been motivated to deviate from the teachings of the prior art to make the inventions, which the Examiner has not even attempted to do. The Federal Circuit emphasized in *In re Lee*, 277 F.3d 1338, 1342-43, 61 USPQ2d 1430, 1433 (Fed. Cir. 2001), that the PTO must find evidence of a motivation to make the claimed invention from the cited prior art itself:

> The patent examination process centers on prior art and the analysis thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. [Citation omitted.] ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors).
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> "The factual inquiry whether to combine references must be thorough and searching." [Citation omitted.] It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with.

There is no evidence in Shah or in any other prior art reference of record to support the Examiner's conclusion that the claimed amounts of additives would have been considered sufficient to perform their "known and expected" functions, since Shah discloses the use of larger amounts of such additives and does not suggest that the use of smaller amounts of additives would produce the results disclosed (i.e., the "known and expected" results) in those references. Shah instead suggests that using a smaller amount of additives than disclosed will not produce suitable results and thus teaches away from the invention. In the absence of a *prima facie* case of obviousness, applicants bear no burden to rebut the Examiner's unsupported remark that applicants' upper additive amount limit of about 0.08% has no special properties as compared with an amount of 0.1%. Accordingly, Shah by itself could not have rendered obvious the inventions of applicants' claims 1-4, 6-8 and 10, and this rejection should be reversed.

C. Mizuno's Disclosure By Itself Cannot Have Rendered Obvious The Subject Matter Of Appellants' Claims 1-4, 6-8 and 10 As A Whole.

In rejecting claims 1-4 and 6-9 under 35 USC 103(a) on Mizuno, the Examiner interpreted Mizuno as disclosing a film having a crystalline polypropylene substrate layer and a surface layer comprising a polypropylene component and inorganic particles such as zeolites or non-melting siloxane particles. The Examiner said that the surface layer may also contain 0.1 to 1 part of silicone oil per part of resin in the surface layer. The Examiner acknowledged that Mizuno does not identically disclose the claimed invention, stating, "The essential difference between the claimed invention and the prior art is the specific combination of antiblocking agents and lubricants." The remainder of the reasoning supporting the rejection on Mizuno is the same as the reasoning employed by the Examiner to support the obviousness rejection on Shah.

As with Shah, the Examiner has failed to point to any disclosure within Mizuno itself to support the Examiner's conclusion that applicants are claiming conventional additives that would have been obvious to use in the claimed amounts. This logic is tantamount to relying on the

general level of ordinary skill in the art, without supporting evidence, to fill the gap between the invention and the prior art, a rationale which the Federal Circuit squarely rejected in *In re Lee*, *supra* at 1344, 61 USPQ2d at 1434, as being contrary to law.

Mizuno's surface layer is not made of a resin that consists essentially of propylene units as claimed. The skin layer of Mizuno's film containing the antiblock additive *must* be a copolymer (either an EP copolymer or an EPB terpolymer) blended with a specific amount of acid-modified polypropylene. Mizuno calls this layer a "propylene random copolymer" that contains 2 to 10% by weight of ethylene: if less than 2% ethylene is present, the film has poor heat sealability, and if more than 10% ethylene is present, the film tends to be sticky and have low scratch resistance. Column 3, lines 29-44. The amounts of ethylene in the surface layer required by Mizuno take it outside of any reasonable interpretation of the claim language requiring the resin of the second layer to consist essentially of polypropylene.

Furthermore, Mizuno, like Shah, discloses the use of a minimum of 0.1% of silicone oil in the skin layer and thus does not suggest films containing at most about 0.08% silicone oil in the surface layer any more than Shah does.

Finally, persons of ordinary skill in the art familiar with Mizuno's modified surface layer materials would have recognized that Mizuno's films do not maintain adequate slip properties, contrary to the claimed invention. For example, if one were to test hot slip properties (i.e., COF slip properties at elevated temperatures at, e.g., 40°C, 60°C, 80°C, 100°C), one would find that Mizuno's film would fail in maintaining slip properties because terpolymers and copolymers like those disclosed as surface layers in Mizuno tend to heat seal and are used for heat sealing properties. In fact, Mizuno emphasizes the heat sealability of its films at column 1, lines 55-57; column 3, lines 39-42 and 51-54; and column 6, lines 16-19, for example. Heat sealability is a film characteristic that differs radically from the basic and novel characteristics of this invention;

it is, in many ways, the opposite of the slip properties provided by the laminate film of this invention.

Table 2 of this application makes appellants' point clear: Example 1, which exemplifies this invention, shows very good hot slip properties up to 100°C; a film similar to Mizuno's, shown in Counter Example 2 (using a terpolymer skin layer with antiblock package, silicone oil, and fatty amide), fails to exhibit good hot slip performance at 80°C and higher. This would have been expected by persons of ordinary skill in the art because at higher temperatures, such copolymers or terpolymers like those used in Mizuno will start to soften and "heat-seal" during the test. As a result, persons of ordinary skill in the art would not have believed, contrary to the Examiner's reasoning, that Mizuno's films could be modified to produce applicants' claimed films, which are not heat-sealable by virtue of their surface layer compositions.

Mr. Chang also explains in paragraph 9 of his declaration why the results produced by this invention are unexpected from Mizuno's disclosure. This showing rebuts any case of *prima facie* obviousness that Mizuno might be found to make out. Pointing to Mizuno's Table 1, Mr. Chang notes Comparative Example 1, where a film made without the acid-modified polypropylene was unsuitable for packaging due to unacceptable powder build-up of the antiblock agent. Mr. Chang explains that this invention, by contrast, surprisingly found that this was not true. Mr. Chang testifies that he and his colleagues have found, and that he is personally aware, that the film of this invention -- which does not contain any acid-modified polypropylene since such an acid-modified material does not consist essentially of polypropylene on account of its different properties -- has never exhibited any powder build-up of antiblock particles either during our film-making production or subsequently in our customer chain-of-use from printing to laminating, and finally, through packaging. He testifies that this result, which the assignee of this application has validated in many customer qualification, scale-up, and commercial trials, is significantly contrary to Mizuno's results.

For all of these reasons, the rejection of claims 1-4 and 6-9 under 35 USC 103(a) on Mizuno should be reversed.

CONCLUSION

For the foregoing reasons, the Board should reverse the final rejection of claims 1-4 and 6-10 in this application.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952**, Ref. 361752000100.

Dated: September 28, 2004

Respectfully submitted,

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APPENDIX OF APPEALED CLAIMS

1. A two-layer laminate film, comprising:

a) a first resin layer comprising a polyolefin resin and having a surface treated by a discharge treatment method that imparts printability to the treated surface; and

b) a second resin layer comprising a resin, a first additive material and a second additive material, wherein the resin of the second resin layer consists essentially of polypropylene and the second resin layer is formed on and adhered to a surface of said first resin layer opposite the treated surface having said surface treatment,

wherein the first resin layer and the second resin layer each contain up to 800 ppm fatty amides comprising stearamide or erucamide,

the first additive material comprises at least one crosslinked silicone polymer in an amount of about 0.1% - 0.5% by weight of the second resin layer and/or at least one silicone oil in an amount of about 0.02% - 0.08% by weight of the second resin layer, and

the second additive material comprises at least one amorphous aluminosilicate in an amount of about 0.10 - 0.50% by weight of the second resin layer.

2. The two-layer laminate film according to claim 1, wherein said first resin layer has a thickness of about 6 - 40 μm.

3. The two-layer laminate film according to claim 1 or 2, wherein said first resin layer consists essentially of polypropylene.

4. The two-layer laminate film according to claim 1 or 2, wherein said second resin layer has a thickness of about 0.2 - 5.0 μm.

6. The two-layer laminate film according to claim 1, wherein at least one component of said first additive material is a crosslinked silicone resin having a spherical average particle size of 2 - 5 μm, a specific gravity of 1.32 at 25°F, a bulk density of 0.15 - 0.50, and a linseed oil absorption rate of 50 - 90 ml/100g or is a silicone oil having viscosity of 300 - 400 cSt., specific

gravity at 77°F of 0.90 - 0.99, and volatile content of 0.001 - 0.005%.

7. The two-layer laminate film according to claim 1, further comprising an anti-block material which is an amorphous sodium calcium aluminosilicate having a particle size of 2 - 5 μm and a bulk density of 0.30 - 0.80 g/cm^3 or an amorphous aluminosilicate having a particle size of 2 - 5 μm and a bulk density of 0.10 - 0.30 g/cm^3.

8. The two-layer laminate film according to claim 1, wherein at least one component of said second additive material is an amorphous sodium calcium aluminosilicate having a particle size of 2 - 5 μm and a bulk density of 0.30 - 0.80 g/cm^3; or an amorphous aluminosilicate having a particle size of 2 - 5 μm and a bulk density of 0.10 - 0.30 g/cm^3.

9. The two-layer laminate film according to claim 1 or 2, wherein the polyolefin resin of the first resin layer consists essentially of a polypropylene homopolymer.

10. The two-layer laminate film according to claim 1 or 2, wherein the resin of the second resin layer consists of a polypropylene homopolymer.

EVIDENCE APPENDIX

PATENT
Docket No. 361752000100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Keunsuk P. CHANG et al.

Serial No.: 09/383,724

Filing Date: Aug. 26, 1999

For: BIAXIALLY ORIENTED POLYPROPYLENE SLIP FILM FOR PACKAGING WITH STABLE COEFFICIENT OF FRICTION PROPERTIES

Examiner: D. Lawrence Tarazano

Group Art Unit: 1773

DECLARATION OF KEUNSUK P. CHANG

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Keunsuk P. Chang declares under penalty of perjury under the laws of the United States of America as follows:

1. I am a citizen of the United States of America, residing at 31 Mayflower Ct., North Kingstown, RI 02852, USA. I am a co-inventor of the invention described and claimed in this application. I received a Bachelor's degree in Chemical Engineering in 1983 from Princeton University and a Master's degree in Chemical Engineering from University of Connecticut in 1985. After graduation, I joined employment at Mobil Chemical Company Films Division until 1995, working in various assignments in product development and manufacturing. In September 1996, I joined Toray Plastics(America), Inc (a subsidiary of Toray Industries) and have been at Toray Plastics (America), Inc. in product development since. Currently I am the Product Development Manager for the Torayfan division of Toray Plastics(America), Inc.

2. I have reviewed the Office Action dated December 4, 2003, and present this Declaration to provide evidence and explanations based on my knowledge and experience in this field of technology to show why certain factual statements made by the Examiner and conclusions he states in the Action are incorrect.

3. In response to the statement in the paragraph at the top of page 3 of the Action, that "a value of 0.08% rounds up to a value of 0.1%," thus giving "the prior art [Shah U.S. Patent No. 6,291,063] value of 0.1[%] enough latitude to read on the applicant's endpoint" of 0.08%, I offer the following information. At the time of the our invention, commercially available dosing and resin blending systems were already very capable of precise mixing and blending of very small quantities of additives. A target additive loading of 800 ppm (0.08%) could easily be achieved and maintained and was clearly distinguishable from a target additive loading of 1000 ppm (0.1%) using dosing systems readily available at the time of the invention.

4. Toray Plastics (America), Inc. purchased a commercial production-grade resin blender from Conair specifically for the commercial production of products in accordance with our invention in 1998 for the express purpose of accurate and precise dosing of the silicone oil additive in a production environment. The unit purchased from Conair was a model GB44x Autoweigh Gravimetric blender with additive feeders for precise metering and dosing of small amounts of additives. Product literature at the time of purchase touted a metering accuracy of 0.5 – 1.0% for each ingredient, as shown in the Conair product literature from September 1989 attached at Tab A citing an accuracy of 1.0%. My experience agrees with this advertisement of accuracy. In fact, I know of some dosing systems that have an accuracy as high as ±0.05% and can dispense as few as 3 to 4 pellets of an additive material to a large hopper batch containing 5000 lbs of resin pellets. The unit we purchased easily had a dosing accuracy of ±1.0%. As such, a target value of 800 ppm (0.08%) for an additive with an error of ±1.0% would give a range of additive concentration from 792 ppm (0.0792%) to 808 ppm (0.0808%). A target value of 1000 ppm (0.10%) for an additive with an error of ±1.0% would give a range of additive concentration from 990 ppm (0.099%) to 1010 ppm (0.101%). Thus, it is readily apparent that

with such precise dosing systems commercially available, persons of ordinary skill in this field of technology could and would easily have distinguished between a 0.08% loading and a 0.1% loading of an additive. Persons of ordinary skill in this field of technology, with which I am very familiar, would never have considered it appropriate to round a 0.08% loading up to a 0.10% loading, which would imply an error of 20%, which is totally unreasonable and would likely produce unacceptable results.

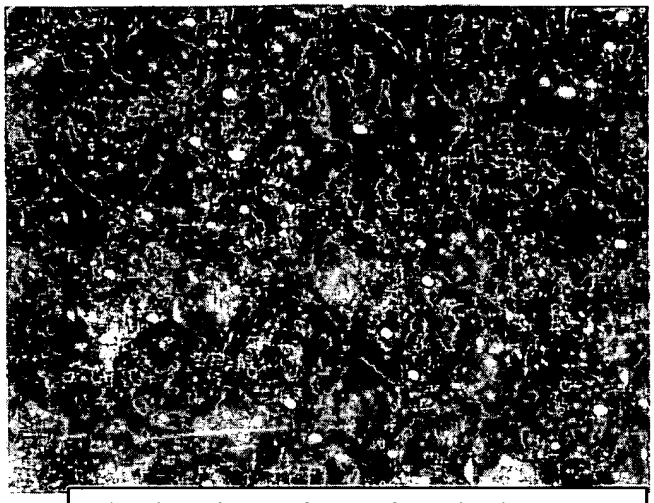
5. With respect to the statement in paragraph 16 on page 6 of the Action, that "values of 0.08% and 0.1% are within scientific error of each other," I cannot disagree more. "Scientific error" is a function of the measurement system, and the more accurate the measurement system, the smaller will be the error. With the accurate dosing systems available at the time (and even more accurate systems available today), a 0.08% additive loading is not "about" a 0.1% loading. Moreover, such accurate dosing of additives is critical in the packaging film industry in order to design precision performing films for many diverse properties and applications. The degree of scientific error experienced with dosing systems is, as noted above, in a range of ±1% of the additive dose, and, depending on which value is the base of comparison, values of 0.08 and 0.10 vary from one another by an error of 20% (if 0.10 is the base) or 25% (if 0.08 is the base).

6. I also present this Declaration to provide some explanation about "printability" in the packaging film industry in response to statements made in paragraph 17 on pages 6-7 of the Action. Flexible packaging, particularly for the snack food industry, requires complex printing graphics and multiple impressions to obtain a full palette of colors and shades for consumer appeal and visual "pop." This type of printing is known as "process printing" whereby engraved print rollers or flexographic plates carry the print image, which itself is made up of microscopic "dots" (see Figure 1 reproduced below). In order to gain the full range of colors, the primary colors of the spectrum are overlaid as multiple patterns of dots, sometimes with dots of one color on top of dots of a different color to achieve the desired shades and tones. Thus, in order to keep the image crisp and clear, dot registration (where one dot has to line up precisely upon another dot) is extremely important. A key factor for this dot registration and dot size is the wettability

of the ink to the substrate. For many polyolefins, such as polyethylene or polypropylene or copolymers of such, the hydrophobic nature and low surface energy of the polymer gives very poor ink wettability for both solvent-based and water-based inks.

Figure 1

A process print job.



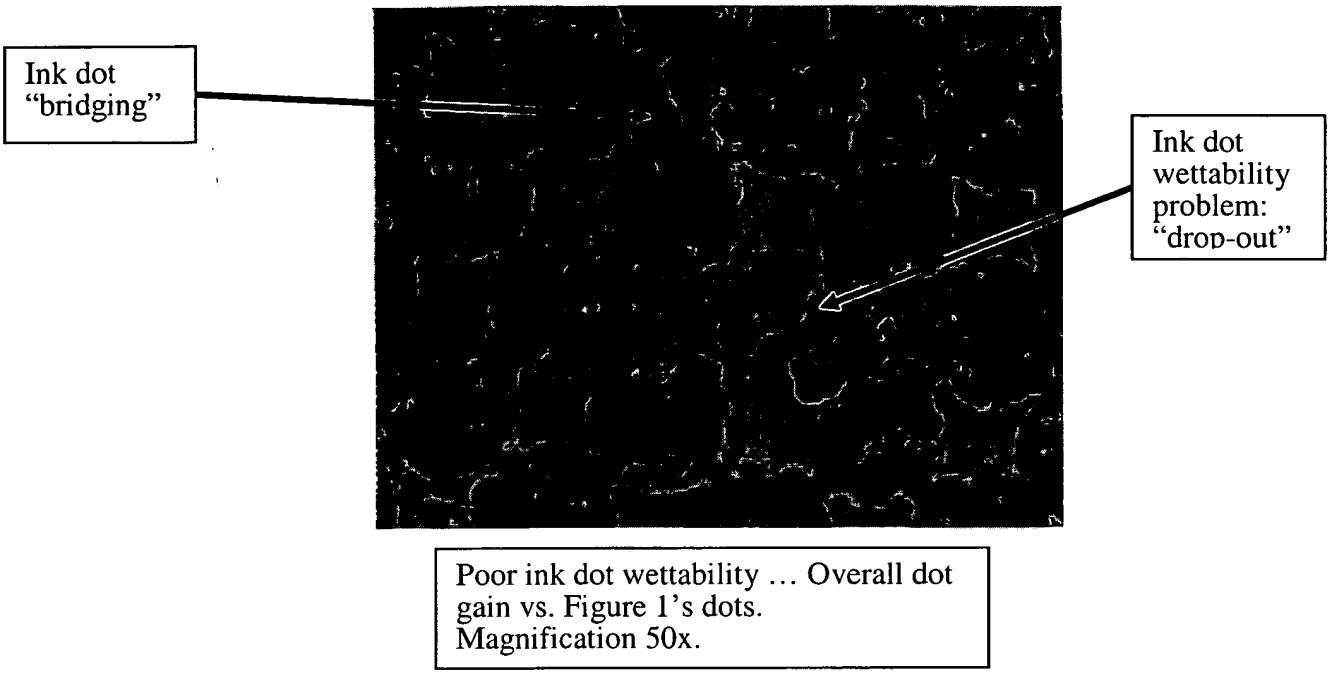
The dots that make up the print image. Magnification is 50x.

Thus, the polyolefin must be surface-treated to create polar sites and increase the surface energy for "wettability" of the inks to adhere properly and efficaciously. (Typically, a surface energy of 38 dynes/cm is the minimum required for high-quality process printing. Untreated polyolefin substrates such as polypropylene have a surface energy of below 30 dynes/cm.) Without this surface treatment, many hydrophobic or low surface energy polymers will exhibit poor wetting of ink dots. The fact that a Sharpie pen can "print" on the surface of an untreated film as the Examiner says in paragraph 17 on page 7 of the Action bears no resemblance or correlation to the type of high-quality process printing required in the packaging industry for which our invention is designed for. Furthermore, persons of ordinary skill in the field of laminated polyolefin films to which this invention pertains would not have considered marking a design with a "Sharpie" to be a reasonable or practical method of printing on laminate films.

7. In fact, even with a treated surface, ink wetting problems occur. Figure 2 reproduced below shows poor ink wetting problems such as ink dot dropout (missing or misshapen dots), ink

dot gain (an undesirable increase in dot size which occurs when the printer tries to improve wettability by increasing the pressure of the print roller against the substrate and results in muddier colors and poorer image resolution) and ink dot bridging (dots that merge together which can be caused by the same reasons as dot gain).

Figure 2



Poor ink dot wettability ... Overall dot gain vs. Figure 1's dots. Magnification 50x.

Moreover, additives in the print film can greatly affect ink dot wettability even when the print film is treated. In particular, migratory additives such as organic slip additives (such as fatty amides like erucamide or stearamide) or organosiloxanes (e.g. silicone oil) are notorious for being poisons to ink dot wettability (silicone oil in particular, as it is by nature very hydrophobic and of very low surface energy). Although such additives are very useful for keeping the coefficient of friction (COF) of the film low for good machinability, they can be detrimental to ink dot wetting in complex process printing, particularly if such migratory additives are loaded at high levels in the film. Thus, for good printability, it is preferred to keep the amount of migratory additives to a minimum, and ideally, to have no migratory additives. The film of Figure 1 contains no silicone oil. In comparison, the film of Figure 2 contains 400 ppm silicone

oil. Thus, these figures demonstrate what even a small amount of silicone oil can do to ink dot wetting and formation.

8. Shah and Mizuno (U.S. Patent No. 5,441,802), whose preferred amounts of migratory additives (e.g. silicone oil and fatty amides) are in the range of 2000-5000 ppm (0.2 –0.5%) or more, use significantly higher amounts of additives that are claimed in this application and would exhibit severe process printing problems with ink dot wettability. Our film invention seeks to use no or a very minimal amount of optional migratory additives to maintain both good COF properties as well as high ink dot print receptivity.

9. I further present this Declaration to explain the unexpected results our invention exhibits compared to what Mizuno discloses. Mizuno, similarly to Shah, teaches the use of large amounts of silicone oil for improved processability on high-speed packaging machines (Column 5, lines 49-57) in loadings from 1000 ppm (0.1%) to 10,000 ppm (1%). Our invention, by contrast, seeks to minimize the amount of silicone oil, if not dispense with it altogether. Our invention achieves excellent processability on packaging machines without the use of such high loadings of migratory additives. It also exhibits excellent COF and hot slip properties (COF measured at elevated temperatures), as explained previously in the Amendment of September 3, 2003, at pages 8-9, which Mizuno's film will not have, even with the higher loadings of silicone oil which Mizuno recommends. These hot slip measurements simulate the use of the film under high-speed packaging environments where frictional heating of the packaging film on the packaging machine's various metal surfaces, formers, etc., can cause problems such as sticking, wrinkling, and film breakage. A good hot slip characteristic (i.e. low COF at elevated temperatures) prevents such problems from occurring. In addition, Mizuno teaches that with large loadings of antiblock particles, the addition of acid-modified polypropylene to the film is essential in preventing the particles from falling out and causing powder build-up on the packaging machine (Column 6, lines 20-26). Indeed, Mizuno's Table 1 shows the results of

Comparative Example 1, where a film made without the acid-modified polypropylene was unsuitable for packaging due to unacceptable powder build-up of the antiblock agent. Our invention, by contrast, surprisingly found that this was not true. We have found, and I am personally aware, that the film of our invention -- which does not contain any acid-modified polypropylene -- has never exhibited any powder build-up of antiblock particles either during our film-making production or subsequently in our customer chain-of-use from printing to laminating, and finally, through packaging. This result -- validated in many customer qualification, scale-up, and commercial trials – is significantly contrary to Mizuno's results.

I declare under penalty of perjury that the foregoing is true and correct. Executed at North Kingstown, Rhode Island, this 8 day of March, 2004.

Keunsuk P. Chang